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CSF Polyamines in Childhood Brain Tumors

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and Tallie Z. Baram, PhD, MD

We read with great interest the study by Phillips and associates [1] evaluating the usefulness of monitoring cerebrospinal fluid (CSF) polyamine levels in the management of childhood brain tumors. We are pleased that there is a resurgent interest in the use of polyamine levels, as well as major activity in the development of new therapies for childhood brain tumors. The purpose of our letter is to bring attention to a recently published independent study [2] in which we reached the same conclusions as did Phillips's group.

As indicated in our study, we believe that abnormally elevated polyamine levels in CSF are always associated with pathological conditions. In the population with brain tumors, such changes are almost invariably a subclinical recurrence. It is difficult to compare polyamine values to "normal or control" values, since lumbar or ventricular punctures in children are rarely done without appropriate indication. Thus, we have found the best marker is an increasing polyamine level in an individual child, which serves as the child's own control. We believe that the greatest value to be derived from CSF polyamine levels is for serial determinations and monitoring, analogous to almost any other use of tumor markers.

Elevated CSF polyamine levels are heavily dependent on the proximity of the secreting tumor to the CSF pathway. Therefore, monitoring of CSF polyamine levels is most useful for tumors such as medulloblastoma.

It would be extraordinarily useful for investigators to pool their data for rare tumors to establish the feasibility of CSF monitoring in such instances. Our data seem to suggest that germinomas are also associated with high polyamine levels, but we examined too few cases to reach a definitive conclusion. Sharing this information within the pediatric neurooncology community would help in the very difficult treatment of rare tumors.

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1. Phillips PC, Kremzner LT, De Vivo DC: Cerebrospinal fluid polyamines: biochemical markers of malignant childhood brain tumors. Ann Neurol 19:360–364, 1986
2. Takaue Y, Nishioka K, van Eys J: Evaluation of polyamine levels in cerebrospinal fluid of children with brain tumors. J Neurooncol 3:327–333, 1986

Reply

Darryl C. De Vivo, MD, Peter C. Phillips, MD,
and Leon T. Kremzner, PhD

We thank Dr van Eys and associates for their comments and we echo their conclusions that further data are necessary to evaluate fully the importance of cerebrospinal fluid polyamine determinations as markers of intracranial pathology. Their findings also suggest that putrescine concentrations may be sufficient in this regard and that serial determinations over time are far more valuable than are any isolated determination. It is our expectation that putrescine measurements will become part of the routine surveillance screen for children with brain tumors, specifically medulloblastoma, when this test becomes readily available.

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